Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)
	)
	)
Implementation of Section 304 of the	) CS Docket No. 97-80
Telecommunications Act of 1996	)
	)
Commercial Availability of Navigation Devices	)
	)
Compatibility Between Cable Systems and	) PP Docket No. 00-67
Consumer Electronics Equipment	)

COMMENTS OF HANA ON
THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

August 24, 2007

In the Matter of	)	
	)	
Implementation of Section 304 of the	)	CS Docket No. 97-80
Telecommunications Act of 1996	)	
	)	
Commercial Availability of Navigation Devices	)	
	)	
Compatibility Between Cable Systems and	)	PP Docket No. 00-67
Consumer Electronics Equipment	)	

COMMENTS OF HANA ON
THIRD FURTHER NOTICE OF PROPOSED RULEMAKING

These Comments on the Commission's Third Further Notice of Proposed Rulemaking are

respectfully submitted by the High Definition Audio/Video Networking Alliance ("HANA").

HANA is a consortium whose objective is to provide the highest quality home networking

solution, and one that is achievable in a timeframe consistent with and in aid of the February 17,

2009 DTV Transition. HANA's members comprise 40 diverse companies from the Consumer

Electronics (Samsung, Mitsubishi, and JVC), Information Technology (IBM, Sun Microsystems,

AMD, Texas Instruments), content owners and developers (NBC Universal, Warner Bros), and

cable (Charter and Cablevision Systems) sectors.[1] HANA is making great progress toward the

creation of national home networking standards that build upon the Commission's having

mandated that DTV decoding be built into every television receiver,[2] and having specified the

---

[1] HANA's full membership is set forth at its web site, http://www.hanaalliance.org/.

[2] *In the Matter of review of the Commission's Rules and Policies Affecting the Conversion To Digital Television,* MM Docket No. 00-39, Second Report and Order and Second Memorandum Opinion and Order (rel. Aug. 9, 2002) ("Tuner Mandate R&O").

"IEEE 1394" industry standard in its Second Report & Order in this proceeding.[3] HANA and its

member companies urge the Commission, in this proceeding, to encourage the marketplace to

build upon this progress as both a near-term solution in aid of the DTV Transition, and a long-

term contribution to consumer welfare and competition based on open standards.

I.   INTRODUCTION AND SUMMARY.

In this Third Further Notice of Proposed Rulemaking,[4] the Commission has requested

comments on specific prior proposals filed by the consumer electronics and cable television

industries, and has also asked for comment, more generally, as to home networking solutions as

they may pertain to all Multichannel Video Programming Distributors (MVPDs) rather than

exclusively to the cable industry. HANA's members maintain very specific interests and

industry affiliations with respect to the 2006 CEA and 2005 NCTA filings referenced by the

Commission, and these interests will be reflected in other Comments that the Commission will

receive. In these HANA Comments, HANA and its members address only the home networking

issues on which the Commission has requested public comment, and address these solely and

directly as they pertain to HANA, and its potential as a solution in aid of competition, the public

interest, and the DTV Transition.

In Summary, HANA and its members believe that HANA's referenced standards provide

a solution to the issues identified by the Commission that builds on, and provides a transition

---

[3] *Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices,* CS Docket No. 97-80, PP Docket No. 00-67, Second Report and Order and Second Further Notice of Proposed Rulemaking (rel. Oct. 9, 2003) ("Second Report & Order).

[4] *Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices,* CS Docket No. 97-80, PP Docket No. 00-67, Third Further Notice of Proposed Rulemaking (rel. June 29, 2007) ("FNPRM").

from, the actions already taken by the Commission in its Tuner Mandate and in the first[5] and

second Report & Order proceedings. Specifically, HANA provides an extension, into home

networks designed for two-way systems, of the DTV decoding requirement of the Tuner

Mandate, and of the regulation, technology, and license framework approved by the Commission

in its Second Report & Order. It provides the most thoroughly tested and expeditious way to

build on that framework for the benefit of consumers, and in aid of the DTV Transition, without

making any prior technical solutions less useful or obsolete.

Indeed, HANA was formed in the wake of and in furtherance of the Commission's

October, 2003 regulations issued with its Second Report & Order. The progress made by HANA

in building on the Commission's approach dovetails very well with the needs, pertaining to two-

way products and the DTV Transition, recognized in this FNPRM by the Commission.

II.   HANA STANDARDS WERE INTENDED AND DESIGNED TO IMPLEMENT AND FURTHER THE REGULATIONS ADOPTED IN THE SECOND REPORT & ORDER.

The October, 2003 Second Report & Order incorporates a standards and licensing

framework jointly recommended by the cable operator members of the NCTA and the consumer

electronics members of CEA. This framework, in terms of referenced technical standards,

requires the use of separable security via a CableCARD (then aka as "POD"), an IEEE 1394 port

(hereinafter "1394") controllable by the CEA 931-A remote control pass-through specification

and the CEA 775 standard, an HDMI interface as protected by HDCP and the 1394 interface as

---

[5] *Implementation of Section 304 of the Telecommunications Act of 1996: Commercial Availability of Navigation Devices,* CS Docket No. 97-80, Report and Order (rel. June 24, 1998) ("First Report & Order");

protected by DTCP.[6] These requirements should also be at the core of any two-way proposal.

Technological improvements like "M-card" (CableCARDs capable of decrypting multiple

channels simultaneously) and DCAS are potential welcome additions to this solution.

These requirements provide the foundation for home networking and HANA-enabled

devices.

- HANA has extended the functionality of 1394 to a full Internet Protocol (IP) based networked solution and has been standardized in the recently approved CEA-2027-B standards, as well as CEA-931-C and other standards referenced by CEA 2027-B and the HANA Design Guidelines.

- While the 2003 Second Report & Order provided for a means to provide a user interface (UI) over the network using CEA-775, the user interface ("UI") was optional and was not implemented in most cable operator set-top boxes ("STBs") deployed in the field. The lack of a functional UI has greatly inhibited the use of the 1394 port for connecting the STB to CE devices. However, in June of 2007, CEA and its member companies approved the CEA-2027-B standard. This standard provides a far richer graphical user interface (GUI), based on industry standard Internet Protocols including HTML, HTTP, and others.

- The Second Report & Order also referenced the use of CEA-931-A to enable basic remote control (RC) commands to pass between the STB and CE devices such as a DTV display. This standard has been updated by the CEA several times since that Report & Order. CEA-931-C provides a more complete set of RC commands including all of the remote control keys required by OCAP, as well as their carriage using Internet Protocols.

Taken together CEA-931-C and CEA-2027-B build and expand on the foundation created

by the 2003 R&O enabling a manufacturers to develop a rich set of features that will create a

competitive marketplace for STBs, one of the primary goals of the R&O. Moreover, in

discussions with several cable operators and STB manufacturers, it appears that it may well be

possible that HANA's methods may be implemented via field updates in many of the currently

---

[6] Recently, DTCP was upgraded with "localization" requirements to enhance its security.

deployed HD STBs that have implemented the Second Report & Order. HANA believes this

argues strongly in favor of maintaining and building upon this 2003 R&O.

III.   HANA IS READY FOR FIELD DEPLOYMENT.

HANA is engaged in a trial with Cablevision Systems to explore the ability to connect

legacy set-top boxes that have existing 1394 ports to other HANA devices to enable multi-room

capabilities. This trial will demonstrate the ability to use legacy set-tops with 1394 as connected

devices in the home *by software upgrade.* Consequently, the set-tops become HANA-enabled

and will, to some extent, be able to communicate with other HANA devices connected in the

home network. Moreover, HANA's fitness and readiness for actual consumer deployment, and

its fit with existing technologies and those under development, has been demonstrated in the

following activities:

- **Deployment in multiple dwelling units.** HANA has been deployed in a multiple dwelling unit ("MDU") in Seoul, Korea. The MDU provides residents the option to upgrade their homes with HANA devices. Using Glass Optical Fiber (GOF), GOF repeaters, and HANA devices (e.g., HANA TV, HANA Home Audio System, HANA IP Gateway, and HANA TV Adapters), residents have the ability to stream content from room to room using a single remote control and a simple TV interface that provides command, control and discovery of connected devices.

- **Support of operators' Graphical User Interface**: Cable operators depend on the ability to present their services in a manner that preserves the User Interface "look and feel", especially in higher valued services such as Pay-Per-View (PPV) and Video-On-Demand (VOD). OCAP also includes standardized methods to present an interactive UI.

  o   All service provider user interfaces delivered across the HANA network are preserved for those services. HANA preserves all user interfaces that HANA devices provide to deliver their services across the network. HANA does not allow the user interface of a service to be replaced, or overwritten. Once a user selects a device from a controller, such as a the selection of a STB from a controlling HDTV, then the UI that is rendered is all, and only, that UI content that is sourced from the remote device.

  o   HANA allows for the preservation of the OCAP UI and the many new services that it provides.

o However, HANA also provides for, but does not require, alternative means to present consumers with interactive interfaces enabling a competitive environment for all providers and manufacturers.

- Thus HANA allows manufacturers and service providers to present consumers with a choice between the service provider, manufacturer, and third party UIs while maintaining a secure environment in which content may be lawfully used.

IV. HANA PROVIDES A PROVEN SOLUTION FOR "QUALITY OF SERVICE" ("QoS") PROBLEMS THAT HAVE NOT BEEN ADDRESSED AS TO OTHER INTERFACES.

Managing bidirectional data flows among devices in a home network presents a complex "Quality of Service" ("QoS") technical issue whose solutions vary among network providers and that has resisted successful standardization in other interfaces. This problem is solved inherently via use of the 1394 interface, which supports the highest level of QoS available in any home network technology today by utilizing guaranteed bandwidth reservation. It thus provides faster and more reliable response time, lower latency, and avoids expensive buffering, as well as the attendant buffer delays in transmissions to recipient ("sink") devices such as DTV displays. It also offers an extremely low Bit Error Rate of 10^{-12} -- a million-fold better than that of "best effort" networks. These are all factors explaining why this interface is approved and specified in both the Commission's regulations and the attendant industry licenses. This is an advantage on which the Commission should plan to build.

Importantly, the IEEE1394 interface is also capable of supporting traffic sourced from asynchronous "best effort" or prioritized Ethernet networks. Thus, this interface does not favor one type of traffic to the exclusion of another. The consumer benefits from a single network that optimally supports all forms of QoS -- from "best effort" to "full guaranteed bandwidth reservation" QoS. This in turn allows manufacturers to optimize product design based on the

applications they are delivering -- which lowers costs to consumers, while simultaneously

providing a higher-quality solution.

V. HANA-COMPLIANT PRODUCTS ARE IN DEVELOPMENT NOW AND CAN BE READILY AVAILABLE TO CONSUMERS AS AIDS IN THE DTV TRANSITION.

In this 3rd NPRM the FCC requests that industry be cognizant of and responsive to the

digital transition occurring on February 17, 2009. Assuming success in the Cablevision Systems

trials, HANA will be on a schedule to have an introduction in retail products by the 2008

Holiday selling season with a home networking solution based on the Second Report & Order,

anticipating expanded capabilities to facilitate connecting STBs to home networks.

This solution will enable the STB to become one of the primary sources of digital

content in the home. HANA is developing other products that extend and complement this

solution. These include:

- 1394-enabled DTVs

- "TV nodes": Used to enable legacy DTVs to be networked

- Network Interface Units (NIUs) (An "NIU" is similar to a STB but does not require onboard decoders. To reduce cost to consumers, the NIU sends compressed video over the network and *utilizes the decoders in the over-the-air ATSC tuners that all DTVs must include.*)

- STBs with PVR (Personal Video Recording) capability

- Audio Systems, including the ability to connect high quality audio over the 1394 network for both video applications as well as audio sourced from cable and other MVPDs.

- Additional products outside of present categoies

HANA is also developing a solution that will support OCAP as it becomes available in

cable systems. Thus HANA's solution enables the full breadth of bidirectional cable services

envisioned by this FNPRM, using cable industry standards for two-way enhanced cable services.

It does so by building on the Second R&O. There is no need to "re-invent the wheel." The FCC need not require any new interfaces in this proceeding.

VI. HANA OFFERS SIGNIFICANT INTEROPERABILITY ADVANTAGES.

As the Commission notes, interoperability is required for retail competition. In addtition to offering features that will revolutionize CE and cable services in the home, HANA is developing a certification program to guarantee device interoperability. This certification program is being developed with several third party test service providers to ensure manufacturers and MVPDs will be able to certify their products.

- **Availability Of Multiple Physical Network Media For The Home Network.** HANA has fostered the development of a no-new-wires approach to home networking for using the existing MSO service coaxial cable to distribute the 1394 based home network signal around the home.

- **New, Fast Media.** Additionally, new, very fast media, for example CAT5/CAT6, POF, and GOF, for additional room to room distribution methods exist for large capacity Audio/Video installations.

- **Broadband HD Networking.** All of these solutions enable 400 Mbps networking for room-to-room connections. This high-throughput is necessary to provide connections between rooms to support HD entertainment.

  o While a single HD stream from a cable head-end may require 38 Mbps, a single PVR may require up to 4 of these streams, two recording channels and two for playback.

  o Added to this need for up to 160 Mbps for a single PVR, there is a need to support additional bandwidth so multiple DTVs can access a multi-tuner STB, satellite receiver, or IPTV services.

  o The network may also be used to connect VoIP services, Internet browsing, file transfers, and other yet to be defined innovations in new products, applications and services.

HANA believes that any solution must have enough capacity to support these and future applications without depending on possible technological developments or complex network architectures required by Ethernet.

VII. CONCLUSION.

HANA represents an inter industry commercial approach that builds on current Commission regulations and referenced standards to provide the highest quality solutions within a timeframe supportive of the DTV Transition. HANA referenced standards, essentially, build on the tuning and decoding abilities that the Commission has already required to exist in all TV receivers sold today. This Commission mandate has been a bedrock of the DTV Transition. HANA allows the Commission to rely on its current regulations to fully meet consumer needs in a bi-directional cable environment. In addition, the HANA approach is well-suited for application in all MVPD delivery systems, incuding satellite, IPTV and FIBER. Accordingly, HANA should play a key role in any home networking or inter-device outcome via the regulations, standards, and licensing framework chosen by the Commission in this rulemaking.

Respectfully submitted,

Dated: August 24, 2007